Meteorological Data Requirements

The \exec directory contains several command line programs (chk_data, chk_rec) that can be used to analyze a HYSPLIT compatible meteorological data file. For example, a sample of the output from chk_file (the source code can be found in \metdata) is shown below for the NCEP global reanalysis file for July of 1979.

File characteristics and projection

Hysplit works only with meteorological data fields that have been projected on a conformal map projection (Polar Stereographic, Lambert, or Mercator) or a regular latitude-longitude grid. The data are organized as one record per variable per level. All records have the same record length. Records are written in a forward time sequence.

```
File start time:      79   7    1    0    0
File ending time:     79   7   31   18    0
Meteo data model   :  CDC1
Grid size x,y,z    :   144   73   18
Records per time   :  94
Minutes between    :  360
```

Variables

A unique 4-character string identifies meteorological variables. The minimum requirements to run the model are the U and V wind components (UWND, VWND), ambient temperature (TEMP), height (HGTS) of the data level (if on pressure coordinates), and the surface pressure (PRSS).

```
Index   Level   #      Variable listing and checksum value
18      10.     4      HGTS 53   TEMP 194  UWND 68   VWND 45
13      100.    5      HGTS 224  TEMP 111  UWND 43   VWND 59   WWND 12
9       300.    6      HGTS 252  TEMP 164  UWND 67   VWND 53   WWND 128  RELH 42
2       1000.   6      HGTS 121  TEMP 191  UWND 67   VWND 29   WWND 114  RELH 250
1       0.0     5      PRSS 235  T02M 245  U10M 185  V10M 93   TPP6 99
```

Record listing

Each data record is composed of a 50 byte header portion, describing the data packing, followed by the packed data of length (I*J bytes). A one-byte per element "Difference packing" is used for all data fields. The first data record (INDX) of each time period contains information on the variables, levels, grid, and checksums.

```
 1  79 7 1 0 0 099INDX   0  .0000000E+00  .0000000E+00
 7  79 7 1 0 0 199HGTS   7  .5039370E+00  .2240000E+03
 8  79 7 1 0 0 199TEMP   4  .6299213E-01  .2236000E+03
 9  79 7 1 0 0 199UWND   4  .6299213E-01 -.2799992E+01
10  79 7 1 0 0 199VWND   3  .3149606E-01 -.1089999E+02
11  79 7 1 0 0 199WWND  -8  .1537894E-04  .1749980E-02
12  79 7 1 0 0 199RELH   7  .5039370E+00  .1000000E+03
```